

October 10, 2001

NKK Corporation  
Toyota Tsusho Corporation  
Hitachi, Ltd.  
TotalFinaElf  
Marubeni Corporation  
Idemitsu Kosan Co., Ltd.  
INPEX Corporation  
Nippon Sanso Corporation

### **DME Commercialization Research Company Established**

*—Seeks to commercialize DME, a directly synthesized source  
of plentiful, cheap, clean energy—*

A consortium of eight companies has reached an agreement to jointly establish a dimethyl ether (DME) production and sales commercialization research company. The partners in the consortium are NKK Corporation, Toyota Tsusho Corporation, Hitachi, Ltd., TotalFinaElf, Marubeni Corporation, Idemitsu Kosan Co., Ltd., INPEX Corporation and Nippon Sanso Corporation. The new company, DME International Corporation, to be established on October 19, will study DME production using direct synthesis techniques.

The demand for energy is rising, driven by surges in population and economic growth around the world and especially in Asia. This has given rise to expectations of increasingly serious energy shortages and environmental issues in the 21st century, and the development of stable energy supplies and the reduction of environmental load are therefore among the most pressing issues before us.

DME is a clean energy source that can be manufactured from a wide variety of hydrocarbon materials. DME has very little environmental load because it generates absolutely no sulfur oxides or particulate matter during combustion.

DME is also non-toxic and extremely easy to handle, giving it wide applications in areas currently served by commercial home fuels (as an alternative to LPG), transportation fuels (as an alternative to diesel automobile fuel and as a fuel for fuel cells), and also applications as a generator fuel (in thermal power plants and as a fuel for fuel cells) and as a source of hydrogen energy. The latent market for DME in Asia alone as a replacement for LPG and as a generator fuel is estimated at approximately 100 million tons a year by 2010 (NKK survey in fiscal 2000). There are thus high hopes for its commercialization as a new generation of alternative energy.

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NKK, backed by the Agency of Natural Resources and Energy under the Ministry of Economy, Trade and Industry (METI) of Japan, has led an ongoing, collaborative effort to establish direct synthesis technology for the low-cost mass-production of DME. There are two other groups around the world developing direct synthesis techniques for DME, but the NKK-led team's technique has achieved worldwide acclaim for its efficiency and for the high levels of progress that it has achieved.

This direct synthesis technique makes it possible to effectively utilize the untapped reserves of low-grade coal and the smaller gas fields that are scattered throughout the Asian region. As a new form of energy with very little constraint on the resource side, DME offers a global-scale promise of energy security and low environmental load.

The research company was organized in conjunction with the move to the conceptual design phase for a demonstration plant aimed at commercializing DME direct synthesis technology. It will focus on marketing activities and will begin to develop markets for DME so that commercial DME operations can get under way as quickly as possible after technology development is completed. The company has a target of fiscal 2006 for the start up of DME supplies. The final size of the operation will be determined from future feasibility studies, but is estimated at between 800,000 and 1.5 million tons per year.

The research company includes many leading Japanese firms, NKK, Toyota Tsusho, Hitachi, Marubeni, Idemitsu Kosan, INPEX, Nippon Sanso, from a wide range of industries, together with TotalFinaElf, one of the leading companies in the oil industry. It will be a significant force and bringing DME to a worldwide market.

**Profile of new DME commercialization research company:**

1. Name: DME International Corporation
2. Address: 1-1-2 Marunouchi, Chiyoda-ku, Tokyo (within the NKK head office)
3. Establishment: October 19, 2001 (tentative)
4. Capital: ¥100 million
5. Investment shares:

NKK Corporation	34%
Toyota Tsusho Corporation	17%
Hitachi, Ltd.	17%
TotalFinaElf	7%
Marubeni Corporation	7%
Idemitsu Kosan Co., Ltd.	7%
INPEX Corporation	7%
Nippon Sanso Corporation	4%

6. President: Mikito Wakamatsu, Vice President and Director,  
Environmental Solutions Center, NKK Corp.
7. Directors: Teruhiro Isayama, Manager, Planning and Marketing,  
Environmental Solutions Center, NKK Corp.
- Kimio Yamamoto, General Manager, Energy Department,  
Toyota Tsusho Corp.
- Masaki Suzuki, Department Manager, Business Development  
Department, Planning & Management Division, Thermal &  
Hydroelectric Systems Division, Power & Industrial Systems  
Group, Hitachi, Ltd.
- Hubert de Mestier, Chief Representative for North-East Asia,  
TotalFinaElf
- Ryoji Yamauchi, General Manager, Business Development Sec.  
Assist. General Manager, Energy Planning & Coordination  
Department, Marubeni Corp.
- Setsuo Hidaka, Asst. to the General Manager, Corporate  
Planning Department, Idemitsu Kosan Co., Ltd.
- Atsushi Sakamoto, General Manager, Development  
Department, INPEX Corp.
- Toshiyuki Wako, General Manager, On-Site & Plant Sales  
Division, Nippon Sanso Corp.
8. Businesses:
- 1) Marketing
  - 2) Business plan formulation
  - 3) Financial plan research

## **Profile of Investors:**

### **1. NKK Corporation**

Established:	1912
Capital:	¥ 233,731 million (as of March 31, 2001)
Employees:	10,702 (as of March 31, 2001)
Sales (parent only):	¥1,010,190 million (April 1, 2000 - March 31, 2001)
Businesses:	Steelmaking, engineering, other businesses (urban development, recycling)
History:	NKK was established in 1912 to manufacture steel pipe, an endeavor that required the most advanced technology of its time. Today, it is the flagship company in a conglomerate with core competencies in steelmaking and engineering operations.

### **2. Toyota Tsusho Corporation**

Established:	1948
Capital:	¥26,748 million (as of March 31, 2001)
Employees:	2,244 (as of March 31, 2001)
Sales (parent only):	¥1,915,839 million (April 1, 2000 - March 31, 2001)
Businesses:	Sales/purchases, import/export, wholesales, brokerage, representation, investment, and incidental lines of the following business fields; Metals, Machinery & Electronics, Vehicle, Industrial materials, Life products & service.
History:	Toyota Tsusho was founded as "Toyota Kinyu Kaisha Ltd." with a mission to provide financing for sales of Toyota vehicles. It moved into the trading and trade services areas in 1945, and has since built itself a strong position as a general trading house for the Toyota group, providing import/export, wholesales, and so on.

### **3. Hitachi, Ltd.**

Established:	1920 (Founded in 1910)
Capital:	¥281,754 million (as of March 31, 2001)
Employees:	55,609 (as of March 31, 2001)
Sales (parent only):	¥4,015,824 million (April 1, 2000 - March 31, 2001)
Businesses:	Hitachi is involved in a wide range of business activities in seven principal segments : Information & Telecommunication systems, Electronic Devices, Power & Industrial systems, Digital Media and Consumer Products, High Functional Materials and Components, Logistics, Services & others, and Financial Services.
History:	Hitachi was founded in 1910 as electrical repair shop. In 1920, it was incorporated as Hitachi, Ltd. It has since emerged as one of World largest manufacturers of electrical equipment and is known for its power generation plants, railroad vehicles, industrial plants, computers, semiconductors and consumer electronics.

### **4. TotalFinaElf**

Established:	1924 (Compagnie Francaise des Petroles)
Capital:	7.4 billion euros (approximately ¥814 billion) (as of December 31, 2000)
Employees:	123,000 (as of December 31, 2000)
Sales (parent only):	115 billion euros (approximately ¥13 trillion) (January 1 - December 31, 2000)
Businesses:	Exploration, development, production, and sale of petroleum, gas and other hydrocarbon resources; manufacture and sale of general chemical products, including petrochemicals.
History:	TotalFinaElf is the world's fourth largest energy company, having been created out of the merger of Total and Elf (France) and Fina (Belgium). It produces LNG in five countries, and supplies Japan with 5 million tons a year (approximately 10% of demand) from the Middle East and Indonesia.

## **5. Marubeni Corporation**

Established:	1858
Capital:	¥194,000 million (as of March 31, 2001)
Employees:	4,855 (as of March 31, 2001)
Sales (parent only):	¥8,154,208 million (April 1, 2000 - March 31, 2001)
Businesses:	Export/import/offshore trading services, domestic wholesaling and agency services, other businesses (resource development, IT products, finance, logistics etc.)
History:	Founded in 1858, the Marubeni Corporation is one of Japan's leading trading houses. It provides a wide range of domestic, import, export and offshore trading services, as well as offering resource development, IT, finance, and logistical services through offices worldwide.

## **6. Idemitsu Kosan Co., Ltd.**

Established:	1940
Capital:	¥38,800 million (as of March 31, 2001)
Employees:	3,652 (as of March 31, 2001)
Sales (parent only):	¥2,203,700 million (April 1, 2000 - March 31, 2001)
Businesses:	Idemitsu Kosan operates petroleum refineries, manufactures oil and fat products, prospects for petroleum and other mineral resources, develops, extracts and produces petroleum and mineral products, and provides import, export, sales, storage, and other ancillary services for petroleum and other products.
History:	Idemitsu Kosan began by selling petroleum products, but has since expanded to petroleum resource development, crude oil procurement, manufacture and sale of petroleum products, petrochemicals, development of alternative non-petroleum energy sources, and environmental products and services. It is a highly regarded firm in the environment and energy fields.

## **7. INPEX Corporation**

Established:	1966
Capital:	¥29,460 million (as of March 31, 2001)
Employees:	227 (as of March 31, 2001)
Sales (parent only):	¥155,571 million (April 1, 2000 - March 31, 2001)
Businesses:	Exploration, development, production, refining, processing, storage, sales and transportation etc. of petroleum and natural gas in countries and regions around the world. Also, ancillary electric power, heat and water supply services.
History:	Established in 1966 to conduct prospecting and development projects in the Republic of Indonesia. Has since expanded from core operations in Indonesia and Australia to businesses in 15 countries of the Middle East, Africa, Central Asia/Caucasus, and South America. INPEX currently produces or has rights to the production of approximately 330,000 barrels (crude-oil conversion) of crude oil and natural gas per day.

## **8. Nippon Sanso Corporation**

Established:	1910
Capital:	¥27,039 million (as of March 31, 2001)
Employees:	1,584 (as of March 31, 2001)
Sales (parent only):	¥185,178 million (April 1, 2000 - March 31, 2001)
Businesses:	Manufacture and sale of industrial gas, air separation plant and semiconductor fabrication equipment, welding and cutting equipment, electronic industrial equipment and materials, ancillary devices, and frozen foods.
History:	Established in 1910 as a limited partnership, began oxygen production in 1911 in Osaki, Tokyo. In 1954 became the first in Japan to manufacture liquefied oxygen. Since launching a large on-site plant (“Sanso Center”) in 1964, the company has focused on supplying industrial gases to large commercial customers in steel, chemical and semiconductor industries.